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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,862	09/24/2003	Richard J. Martin	2003P14536US	4383

7590 04/20/2007

Siemens Corporation
Intellectual Property Department
170 Wood Avenue South
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EXAMINER	
PIPALA, EDWARD J	
ART UNIT	**PAPER NUMBER**
3663	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/669,862	MARTIN, RICHARD J.	
	Examiner	Art Unit	
	Edward Pipala	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *05 February 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to Applicant's amendments, remarks, and the declaration of Mr. Richard Martin.

Claims 1-7 have been previously canceled, claims 8-20 are still pending, claims 21-27 are newly presented..

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 8, 9, 12-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herron et al. (6,343,251) in view of Henry et al. (6,845,306).

Herron et al. discloses a method for monitoring the operation and predicting the part life consumption of turbomachinery such as a gas turbine in an electric powerplant, wherein data regarding the operation of said gas turbines is collected and analyzed so as to provide reports of the operational hours, operating conditions, number of starts, etc., so as to aid in determining the operational life of the turbomachinery (turbine) parts, and for scheduling maintenance as necessary. In the background of the invention (col. 1, ll. 33-40) Herron et al. discloses that it is well known for gas turbines to have many parts and components that are exposed to corrosive combustion gasses,

extreme temperatures, centrifugal stresses and other adverse operating conditions, and that these conditions impose stresses and corrosive elements on the gas turbine that cause wear, strain, fatigue, corrosion and other harmful effects on the major rotating components such as the shaft, turbine and compressor. Column 1, line 53 through col. 2, line. 7 discloses that the components that generally require much attention to maintenance also includes such basic gas turbine components as control devices, fuel metering equipment, gas turbine auxiliaries, load packages, for which preventive maintenance and replacement of parts is scheduled based on the operation history of the gas turbine (col. 1, l. 64 – col. 2, l. 7 in particular). Column 5, lines 1-9 of Herron et al. discloses that sensor signal data may be processed by the controller (14) and outputted as operational data to an on-site monitor (OSM, 16), which may be a local computer system on site at the facility with the gas turbine (where the OSM may monitor several turbines at a particular facility), and that the OSM may monitor data in both real time as well as maintain historical data regarding past operational activities of the gas turbine collected from each gas turbine in one or more databases. Further, col. 5, ll. 10-32 disclose the use of a remote database (18) to which the OSMs upload (i.e., its downloaded by the remote database) information regarding many gas turbines and for which maintenance factors that influence part life are collected and stored, and for which maintenance is scheduled depending on the major operating factors stored and detected in the remote database.

However, Herron et al. do not particularly teach or otherwise disclose marking the plurality of turbine components used in the turbines, even though it is notoriously old to use inherent "markings" such as serial numbers on parts for the purpose of identifying

individual items that are otherwise similar (e.g., have the same part number), and that markings such as serial numbers are generally applied to the surface(s) of components in such a manner so as to be readable by a human looking at said surface.

Henry et al., disclose a component trend monitoring system for monitoring the performance of components (first lines of the abstract), and comparing the performance with stored performance data to accurately trend and predict the failure of components through the use of computer chips attached to various components which receive and store historical and performance data about each component, and a processor for retrieving the stored data from the memory chips. In col. 1, Henry et al., teaches the use of this monitoring or tracking system in conjunction with aircraft auxiliary power (APU) units which are generally gas turbine engines used on aircraft to supply pneumatic power and/or shaft horsepower when the primary propulsion engines are not running, that an APU may include (among other ancillary parts), a combustor (20) having a primary fuel nozzle (22), a turbine (26), a gearbox (32), an electric generator (34), a lube pump (36), a fuel control unit (38) and a starter motor (40), and that when one of these components fails it may be easily removed by detaching it and replacing it with a new component. In col. 1, line 64 through col. 2, line 9+ of Henry et al., teaches that the APU has a data memory module (DMM) that collects and stores APU operational and performance data as well as the serial number of the APU, which is used for tracking APU health and operating conditions since these types of line replaceable units (LRUs) are often unnecessarily replaced, exchanged or discarded when thought to have failed. In col. 2, line 42 through col. 3, line 4 Henry et al., discloses that the earlier discussed memory chips are imbedded in each LRU during its

build, that the data contained therein describes the component by serial number, part number, as-built performance, and other pertinent data which is loaded on a smart chip for keeping track of LRU usage (hours and cycles), and for use with monitoring software that will track and compare the LRU usage and performance to determine when it has failed or is about to fail so as to reduce the chance for an unscheduled replacement thereby reducing operational cost. Further, in col. 3, ll. 58-62 Henry et al. teaches that these chips may be located with any component where there may be a need to track usage or where there may be a desire to know when a component has failed or is about to fail, where the following paragraph again teaches the use of part number as well as serial number information (data).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have implemented the serial number and/or part number tracking taught by Henry et al., within the context of the turbine monitoring method of Herron et al., including the use of serial number type marking on the components, because both are directed to the field of monitoring the operating conditions of gas turbines for the purpose of monitoring the components thereof and scheduling maintenance or replacement of individually distinguishable marked components in a cost effective manner so as to avoid unnecessary and untimely repairs.

With respect to claim 9, which recites identifying a location where at least a portion of the turbine component was manufactured, please see col. 3, line 63 through col. 4, line 4 of Henry et al., which disclose that the data stored on the chips may

include the part number, serial number, build location, ... and any other data as deemed necessary.

With respect to claim 12, which recites identifying a repair procedure that at least a portion of the turbine component underwent, please col. 4, ll. 1-3 wherein Henry et al. further discloses that the data stored on the chip may also include data or information with respect to whether the part is new or repaired, and the type of repair if the part has been repaired.

With respect to claim 13, which recites that the operational data stored is selected from the group comprising equivalent base hours and equivalent starts, please see at least col. 2, line 26–44 of Herron et al., as well as col. 2, ll. 48-50 and col. 6, ll. 1-4 of Henry et al.

With respect to claim 14, which recites that the operational data includes the turbine in which the component is placed, please see at least col. 12, ll. 49-58 of Herron et al. which teaches that the summary reports for various turbines are associated with or represented by serial numbers in column (1402) of figure 12, as well as col. 4, ll. 27-35 of Henry et al., in which it is taught that the chips located with the LRUs may be programmed to look at the first two memory locations for a part number and serial number of an LRU in order to determine if this is a new LRU or if it had been replaced as well as col. 5, line 66 through col. 6, line 4 which discloses monitoring the LRUs individually by part and serial number.

With respect to claim 15, which recites that one of the desired aspects [being tracked] is remaining life of the turbine component, please see at least col. 2, ll. 26-28 of Herron et al. which discloses predicting the expected operating life of various components of a turbine as well as at least col. 2, ll. 53-60 of Henry et al. which teaches the use of monitoring software to track and LRU and determine when a component has failed or is about to fail (i.e., remaining useful life).

With respect to claim 16, which recites that the desired aspect of the turbine component includes a description of the turbine component, please again see at least col. 2, ll. 42-52 of Henry et al. wherein it is taught that the memory chip embedded in each LRU contains data that describes the component by serial number, part number, as-built performance, etc.

With respect to claim 17, which recites that the turbine is a land based combustion turbine engine, and claim 18 which recites that the turbine is a part of a powerplant that produces electricity, please see the whole of Herron et al.

With respect to claim 21-24, which depend from claim 8, and further recite that the turbine components are marked with a bar code, including the location of the marked components, including operational data associated with the components, and also including when and where the component was manufactured, please note the above sections of Henry et al. and in particular column 3 beginning with the "detailed description of the invention" (line, 25), through about line 45 of column 4, wherein Henry

et al. teaches tracking parts or components with respect to their usage, build location, types of repairs, and doing so by means of a part number and serial number.

With respect to claims 25-27, which recite further including information as to in which unit a component was used, and repair or refurbishment, and where a new, repaired or refurbished component is coordinated or matched with turbine engines needing such a component, please note that in the above combination of Herron et al. and Henry et al., both are concerned with tracking trends for turbine components so that the individual components may be replaced in a timely manner and repaired if possible for further re-use in the same or another similar unit.

3. Claims 10, 11, 19 and 21-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herron et al. and Henry et al. as applied to claim 8 above, and further in view of Isobe et al. (6,636,813).

The combination of Herron et al., and Henry et al., taught above with respect to independent claim 8, provides for a method of tracking desired aspects of marked turbine components using data obtained and uploaded from turbine control systems to a central processing station, but fails to address the composition from which at least a portion of the turbine component was manufactured (claim 10), identify a manufacturing step (claim 11) or perform statistical analysis on the operational data to help estimate the cost of a repair operation (claim 19).

Isobe et al. discloses a service life management system for high temperature parts of a gas turbine in which a server manages a plurality of client systems (subprograms) that are dedicated to different objects and share respective element data such as real component damage, design materials, etc. which are necessary for the evaluation of remaining life and enables the operation of the gas turbine to be optimized based on the damage of the evaluated parts thereby contributing to the operational cost reduction of the gas turbine (from the abstract). What Applicant refers to as a statistical analysis is referred to as an analytical evaluation and as a result of tendency evaluation by Isobe et al., as shown in at least figure 3, figures 6B and 6C, figure 7, figure 8, figure 14, figure 15, and especially in figure 16 wherein flow chart block (12) includes a cost evaluation database. The composition and manufacturing step considerations of claims 10 and 11 are considered to include whether or not a thermal barrier coating is or has been applied (a material composition, in addition to that of the turbine blade material itself), and the coating of the blade is also considered to be a manufacturing process step with the context of claim 11. Column 3, lines 6-27 and 49-63 disclose the essence of the remaining life management system of Isobe et al. as it pertains to the above claims in question, where col. 6, ll. 1-35 further teaches the evaluation process for turbine parts and the evaluation of their remaining life. Column 10, lines 22-28 and col. 12, ll. 25-57 disclose calculating a total cost for repairing a particular component.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have implemented the teachings of Isobe et al., within the context of the above combination of Herron et al. and Henry et al., because all three are directed to the monitoring of turbine systems for the purpose of determining the

useful life or eminent failure of a component so as to operate the turbine system in the most cost effective manner and without unnecessary disruption or delay.

Response to Arguments

4. Applicant's arguments filed 2/5/07 have been fully considered but are not deemed to be persuasive.

The declaration of Mr. Richard Martin has been fully considered by the Examiner but is not deemed persuasive for the following reasons.

In the above rejection of independent claim 8, and with respect to the teachings of Henry et al. in particular, the components thereof can be considered to be "marked" in either or both of by the embedding of memory chips in each of the LRUs as taught in lines 42-43 of col. 2, and by the use of component serial numbers (or even part numbers for that matter as it concerns the claims) which is taught in the latter part of this same paragraph and has now been clearly pointed out in the above rejection. Even more so is the fact that the use of serial numbers or part numbers as markings on the turbine components is essentially inherent, otherwise it would be of no use for Henry et al., to record such information onto the computer chips of his invention. Furthermore, the use of part and serial numbers is clearly shown on the front of the Henry et al. patent.

Then there's the issue that it is notoriously old to "mark" items when they are manufactured with indicia such as a serial number for the exact purpose of being able to track and distinguish similar looking items, such as turbine blades, from one another for the purpose of determining ownership (or in warranty situations), as taught by Henry et al. in the first lines of column 3, and the need for a human to be able to read these types of markings when determining which part is being worked on and what service it may need in light of its previous conditions of use. Even Applicant's commonly assigned and incorporated by reference published patent applications do not seem to suggest that the use of serial number is anything but old in the art, especially since the manner or type of markings is not being claimed.

Applicant also argues that (with respect to claims 10 and 11), there is no teaching that the markings represent either the material composition from which the component was manufactured, nor a manufacturing step for at least a portion of the component.

It is because Isobe et al., teaches evaluating the remaining life of turbine components in consideration of the design and material of turbine components that it was used in the above rejection of claims 10, 11 and 19, in that components such as turbine blades are individually evaluated and tracked by both part and serial numbers, which also enables one using the life management system of Isobe et al. to also determine the original design and material of the component as stated previously.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward Pipala whose telephone number is 571-272-1360. The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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JACK KEITH
SUPERVISORY PATENT EXAMINER

ejp